

New Hampshire's

Draft State Energy Strategy

About OEP

- The mission of OEP is to:
 - Support planning that enhances the State's economic growth while preserving its unique character and natural beauty
 - Advocate sound energy policies that encourage the use of renewable resources, reduce energy demand and make energy more affordable

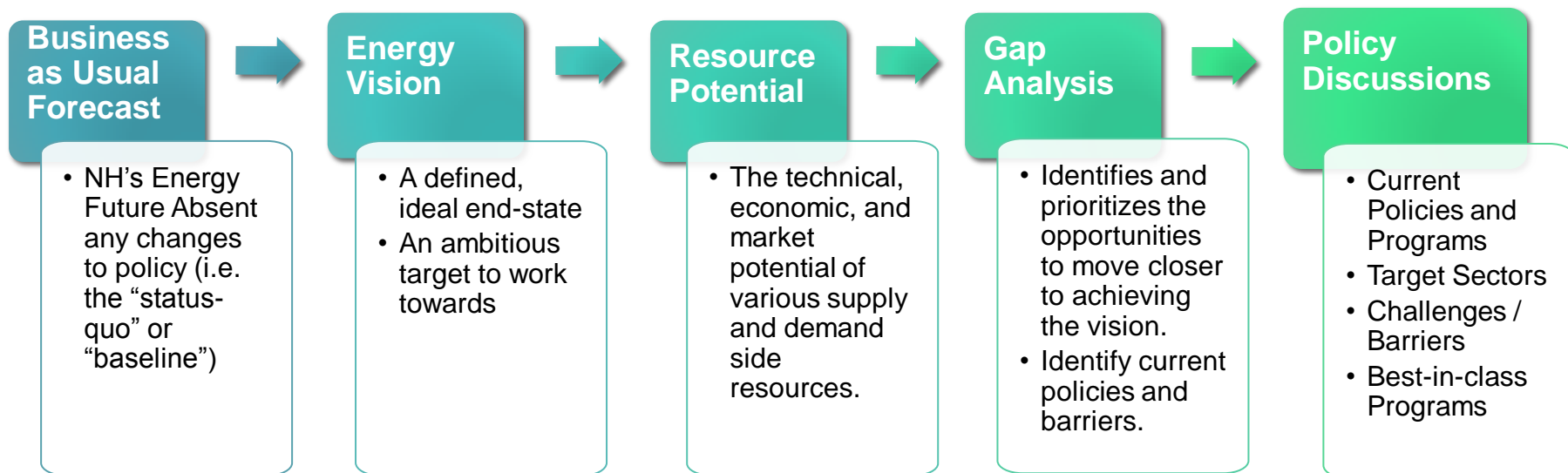
SB191 of 2013

- “Development of a state energy strategy is necessary to ensure that the state’s energy policies and programs support the state’s economic, environmental, and public health goals.”
- “...recommendations for policy changes and priorities necessary to ensure the reliability, safety, fuel diversity, and affordability of New Hampshire’s energy sources, while protecting natural, historic, and aesthetic resources and encouraging local and renewable energy resources.”

State Energy Advisory Council

- SB191 created an Advisory Council to assist OEP in the development of a state energy strategy:
 - OEP Director Meredith Hatfield, Chair
 - PUC Chairman Amy Ignatius
 - DES Commissioner Tom Burack
 - Senator Martha Fuller Clark
 - Senator Bob Odell
 - Representative Beatriz Pastor
 - Representative Charles Townsend
 - Representative Herbert Vadney
- After a competitive process, Navigant Consulting was hired to assist with developing the strategy

Strategy Development Process



Strategy Development and Recommendations

- Resources and policies support the key energy vision elements
- Challenges and barriers identified
- Strategies selected based on fit, impact, relative cost and effort
- Strategies aligned to overcome challenges and barriers building on existing policies and borrowing from best-in-class programs

Draft Energy Strategy Context

- SB191 reflects the Legislature's desire to be more informed about the State's energy future and to have recommendations to help shape it.
- SB191 did not set a specific goal to work toward. As a result, this process seeks to both define the vision and develop the strategies to achieve it.
- NH is not an energy island and some issues are out of the state's control. In recognizing this the strategy focuses on actions the state can take:
 - Ensure New Hampshire proactively represents its interests on regional matters
 - Align incentive structures to achieve the vision
 - Promote consumer awareness of the options available
 - Remove barriers to private investment
 - Use limited public funds more effectively to spur private investment (and to help those who can't afford to take action)
- The Final Strategy will help inform both public and private activities, and many of the recommended strategies will require legislation to be implemented.

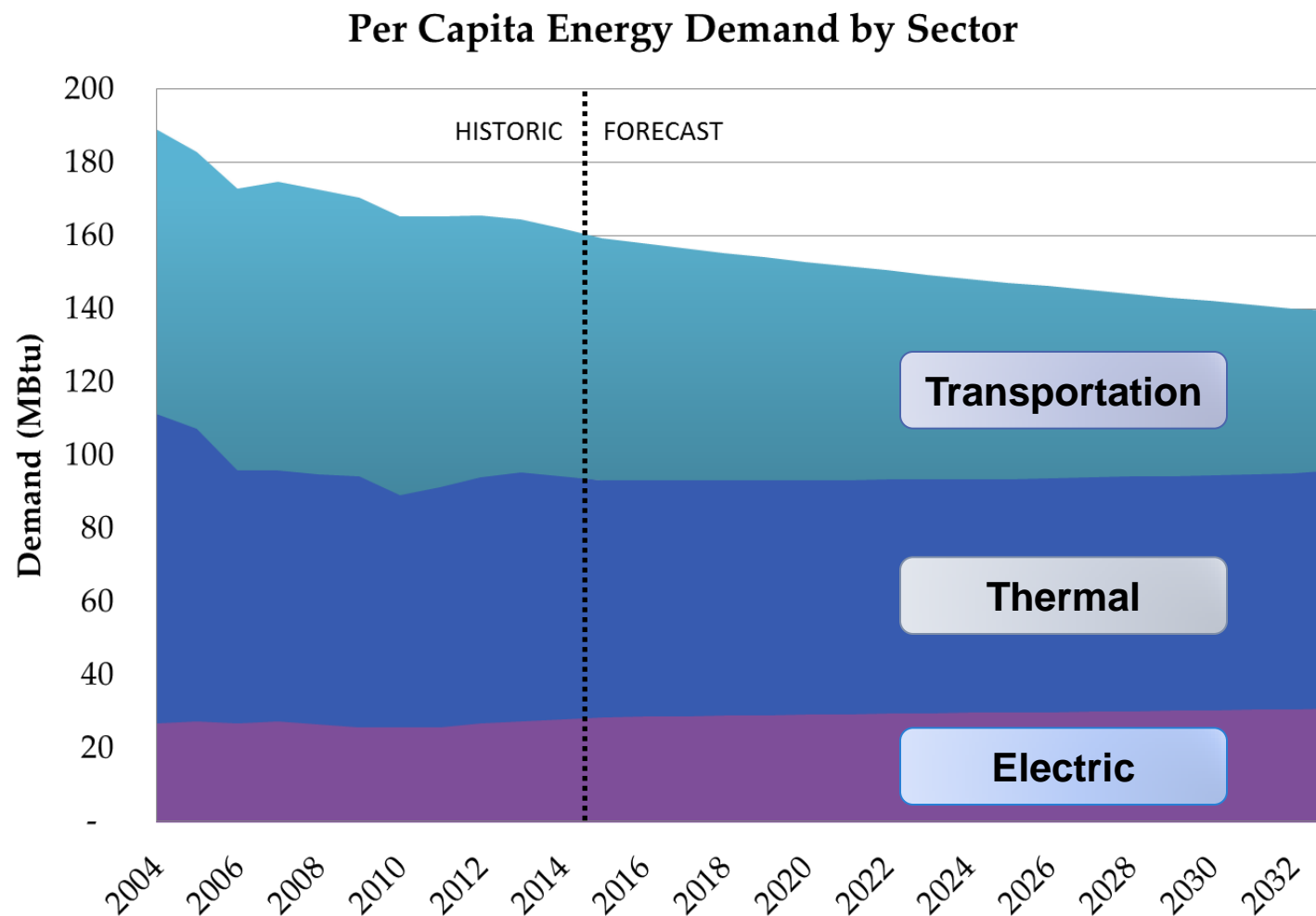
Baseline/Business as Usual Forecast

- Navigant developed a baseline forecast to describe New Hampshire's energy future under the current portfolio of energy policies, plans, and programs at the state, regional, and national level. Also referred to as the "business as usual case," it forecasts energy demand patterns and supply infrastructure absent any new or amended policies.
- Current and Proposed Energy Policies, Programs, and Regulations:
 - Consideration of existing and proposed legislation, regulations, policies and programs at the state, regional (ISO-NE), and national level that may influence energy use in state.
- Energy Demand in NH: Current and Projected
 - Demand is divided into the electric, thermal, and transportation sectors, and as appropriate residential, commercial and industrial applications.
- Energy Supply and Infrastructure in NH: Current and Projected
 - Including a discussion of power generation assets, distribution and transmission systems; current thermal and transportation energy infrastructure.

Key finding: While demand is steady through the forecast period, emissions are declining and costs are increasing.

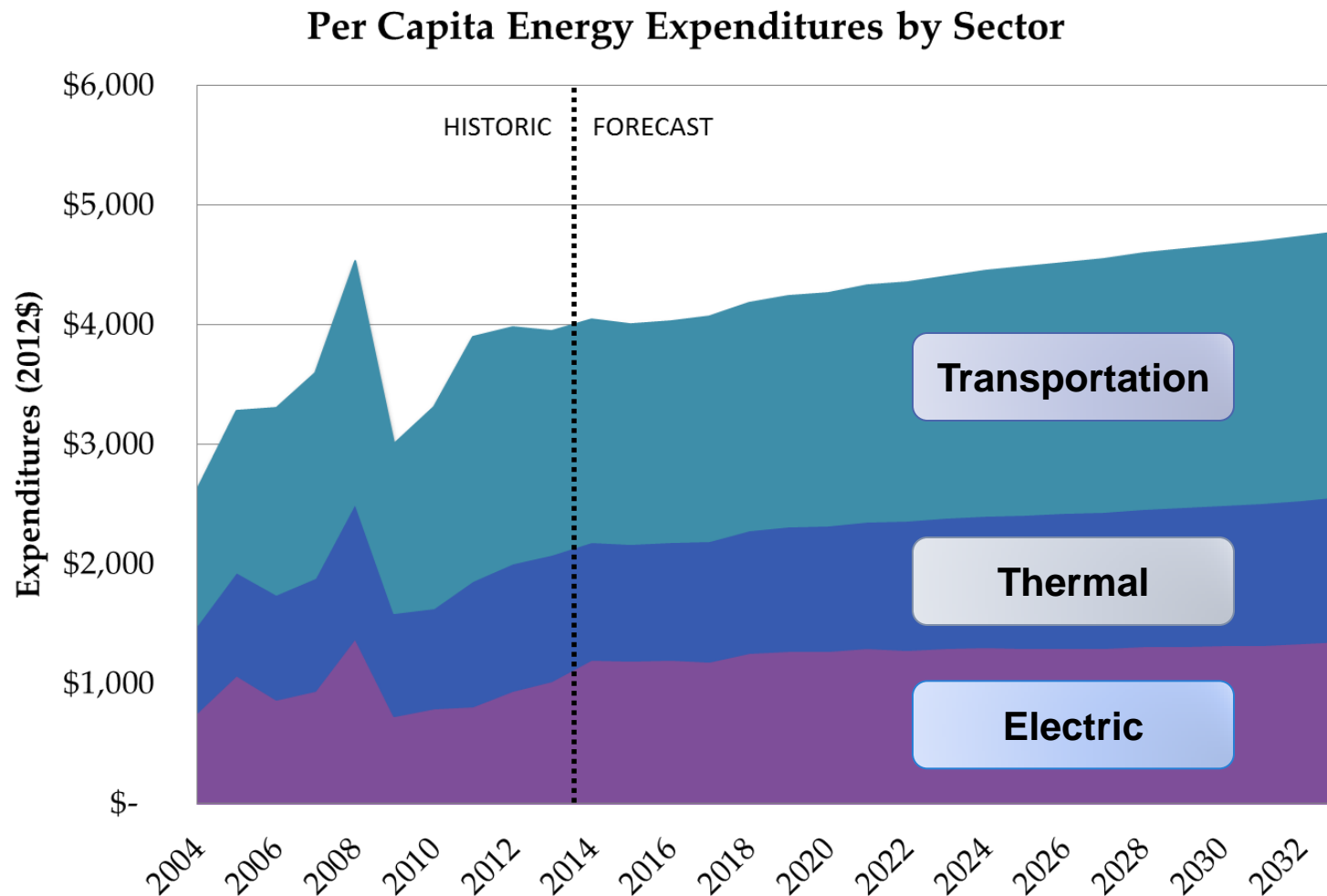
- Power generation in NH (& NE) is getting cleaner, driven by both environmental regulation and fuel economics.
- Gains in efficiency are offset by increased electric demand due to a greater number of households, and greater usage per household.
- Recent price volatility in deliverable heating fuels is pushing customers away from these fuels.
- The thermal energy sector offers the most promising opportunities for gains in efficiency and cost containment.
- Additional reductions in emissions and expenditures in the transportation sector will likely require changes in consumption patterns and alternative modes of transportation.
- Commercial demand is projected to grow in contrast to industrial demand as the New Hampshire economy shifts from manufacturing to information technology.

While per capita demand for transportation fuels is forecast to drop, both thermal and electric demand are forecast to hold steady.



Source: Navigant Analysis

Despite shrinking demand in transportation, the forecast rise in fuel prices contributes to an overall increase in total expenditures.



Source: Navigant Analysis

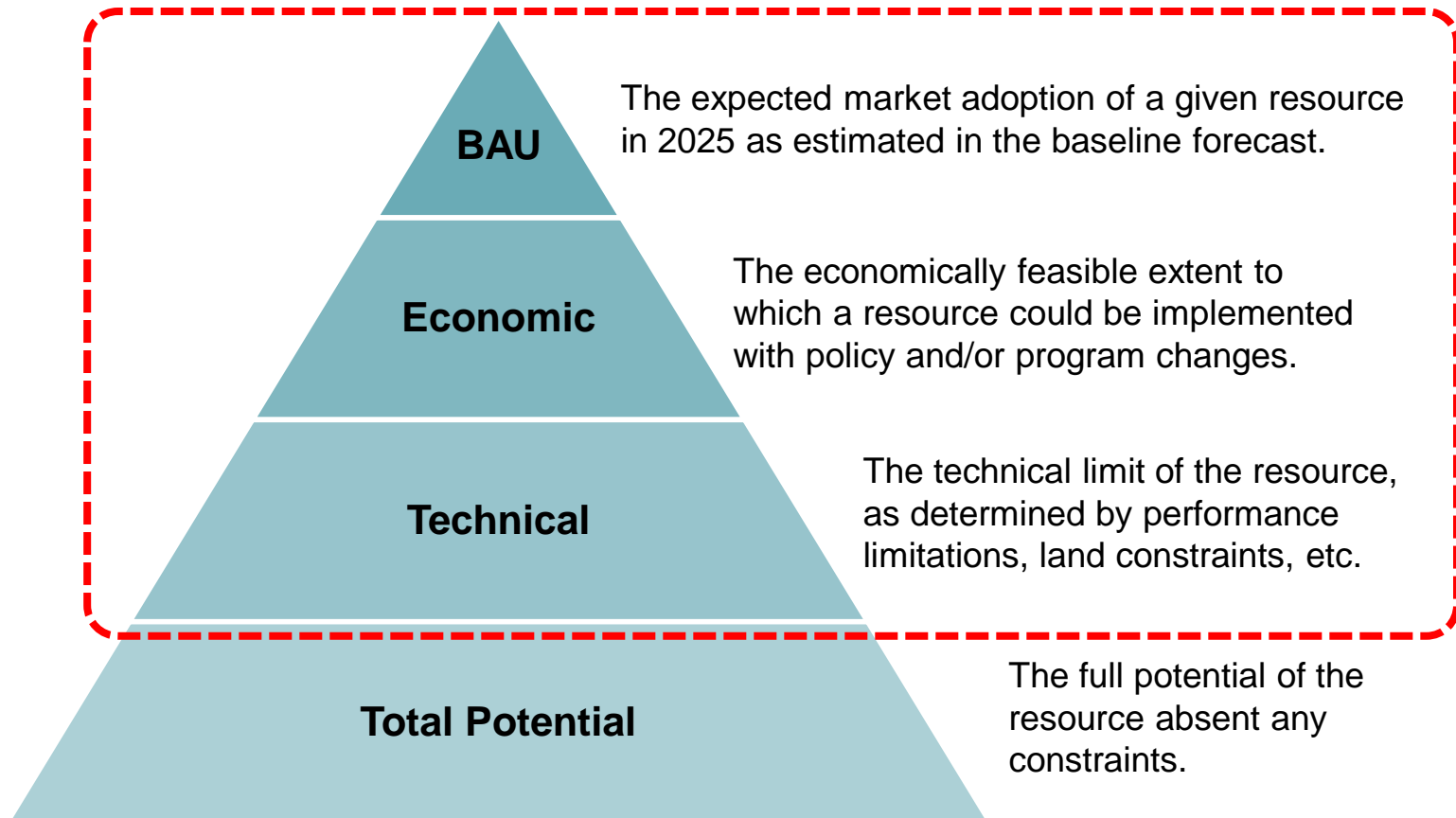
Energy Vision

Summary

In 2025, consumers are empowered to manage their energy use by taking full advantage of the information, market mechanisms, energy efficient technologies, diverse fuel sources, and transportation options available to them. These services extend from the city centers and coastal areas of Southern New Hampshire to the rural corners of the Western regions and the North Country - closing the gap in disparity of energy services across the state. The results of these widespread consumer empowerment initiatives are lower energy bills, greater choice for the consumer, increased self-reliance, and a cleaner, more sustainable and resilient energy system.

From an economic perspective, New Hampshire's stable energy policies leverage public funds ten to one – inspiring investor confidence, creating high quality jobs, and attracting new residents and businesses to the state. Efficient transit systems help make New Hampshire tourist friendly and the state's high efficiency building stock, skilled workforce, and well managed natural resources make it regionally competitive and help keep dollars in state. As an active participant in New England's broader energy economy, in-state suppliers of energy services receive the proper signals to drive their business decisions toward creating an efficient and secure energy system that delivers cost-effective, clean energy to all.

For each resource, Navigant estimated the technical, economic, and market potential in 2025.



Guided by SB191, the Energy Council, and the Resource Potential, the Draft Strategy focuses on:

- Energy efficiency and demand-side strategies
- Grid modernization to support customer action to reduce usage, and additional small-scale local energy resources
- Achieving our potential for solar and other small scale energy production
- Increasing fuel choice for all areas of the state
- Expanding transportation options

The best opportunities for altering the course of New Hampshire's energy future include:

Building Efficiency

- Residential Thermal Efficiency
- Commercial Thermal Efficiency

Thermal Fuel Choice

- Residential Biomass
- Industrial Natural Gas
- Residential Geothermal
- Commercial Air Source Heat Pumps

Transportation Efficiency

- Savings from Light Duty Fuel Economy
- Savings from reduced Vehicle Miles Traveled

Transportation Fuel Choice

- Biofuels
- Natural Gas
- Electric

Renewable Energy Generation

- Solar PV

Energy Efficiency Context

- Despite long standing energy efficiency programs, numerous studies have identified substantial remaining cost effective gains in efficiency.
 - In 2009 GDS conducted a study for the PUC on the potential for energy efficiency in the state, finding that significant additional cost effective efficiency opportunities remain, but noted that NH will not capture them without program and/or policy changes.
 - In 2011 VEIC and GDS conducted a study for the EESE Board on efficiency and clean energy issues. It reaffirmed the remaining efficiency opportunities, and recommended specific program and policy changes to address this.
 - In 2013 VEIC and GDS prepared a report detailing how NH could increase annual efficiency savings significantly by adopting a clear efficiency goal. The report noted that NH is missing out on \$355M annually in energy savings and related economic growth.
- This Draft Strategy builds on these studies and reports, again recommending that NH do more to reap the benefits of cost effective energy efficiency.

Energy Efficiency Strategies

- Address utility disincentives through rate redesign.
 - Utilities currently have a strong incentive to sell more energy in order to maximize profits, which directly conflicts with their charge to administer efficiency programs that reduce sales.
- Establish an Energy Efficiency Resource Standard (EERS).
 - NH does not have an efficiency goal; successful states do. (ACEEE ranked NH #21, the lowest in NE)
- Establish a “Green Bank” model to better leverage private financing and increase program coordination.
 - Investigate whether a “Green Bank” could leverage existing public funds to increase efficiency and coordinate the various financing programs in order to decrease consumer confusion and increase private investment.
- Market the value of high efficiency buildings to consumers.
 - A portion of the budget of each program should be allocated to marketing and consumer education to help realize efficiency gains without rebates.

Grid Modernization Context

- Today's grid planning and investment tools do not reflect new technologies or the desire to support smaller scale, local resources.
- Grid policies have not kept pace with changes in energy technologies and policy goals, and can present barriers to pursuing clean energy and demand side resources.
- Facilitating development of new clean heat & power sources, energy efficiency, electric vehicles and maximizing consumer value will require a smarter, more nimble, two-way system.

Grid Modernization Strategies

- The PUC should open a docket to explore appropriate Grid Modernization for the state.
- The electric utilities should implement consumer education programs on the benefits of the smart grid. This effort should engage other key stakeholders in the state, such as the EESE Board and low-income advocates.
- Utilize existing Distributed Energy Resources statute (RSA 374-G) to increase deployment of energy storage and other innovative technologies by utilities.

Renewable Energy Context

- A balance between grid-scale and distributed resources is essential to the reliability, security, and affordability of our energy system.
- A desire for cleaner energy sources, and for in-state economic benefits.
- Reducing the state's reliance on imported fuels will generate significant economic benefits, as the dollars are kept in state rather than exported.

Renewable Energy Strategies

- Open a PUC docket to examine whether rate design changes including dynamic pricing mechanisms could better incent DG by recognizing the value that it provides to the grid. The docket should include evaluation of demand response and storage.
- Explore ways to use the existing Renewable Energy Fund (REF) to increase the leveraging of private financing
- Investigate whether the RPS targets for each source are aligned with the economic potential of that source
- Examine the state's ACP levels within the regional context.
- Develop model processes for implementing property tax exemptions for renewable energy systems, as allowed under RSA 72:61-72.
- Examine whether a Feed in Tariff would provide a better incentive than the current net metering structure.

Fuel Choice Context

- Disparities in fuel availability and price are impacting the competitiveness of some communities in attracting and retaining businesses.
- Residential consumers are similarly harmed by high prices for fuels when they don't have an option to switch
- Increasing fuel availability helps consumers control costs by allowing them to switch fuels during times of price volatility. If new fuel choices are in-state resources such as biomass or other renewables, they can also increase the overall security of the energy system and generate local economic benefits.

Fuel Choice Strategies

- Explore ways to attract more private financing for clean energy projects, perhaps in coordination with efficiency financing through a “Green Bank.”
- Set targets for gas utilities to achieve higher utilization rates for gas among on-main consumers.
- Continue the development of the renewable thermal requirement of the RPS to maintain momentum in adoption of renewable thermal technologies.
- Clarify permitting requirements for trucked natural gas transfer stations to extend gas access to off-main consumers.
- Develop outreach and education programs on the advances in technology, costs, and benefits of alternative fuels and how they can be utilized by individual consumers.

Transportation Context

- In New Hampshire transportation is responsible for 35% of energy usage, and all gas and diesel (except bio fuels) is imported, resulting in dollars leaving the state.
- Energy-related transportation initiatives are rarely integrated with more traditional efforts, but they are highly linked. Reducing Vehicle Miles Traveled (VMT) and transitioning to more efficient vehicles (which tend to be lighter) not only saves energy, it also reduces wear and tear on our roads and helps constrain maintenance costs (in the past two decades, the cost of paving materials has increased over 400%).
- Electrifying the transport sector will also save drivers money. Current estimates of cost equivalent for electric cars are \$1.65 a gallon. Shifting to electric vehicles will reduce our total expenditure on transportation fuels and slow the flow of wealth out of the state, but we need to prepare for this.

Transportation Strategies

- Adopt California Low- and Zero- Emission Vehicle (LEV & ZEV) standards (NH is only NE state that hasn't done so)
- Include EV and Natural Gas requirements for state vehicle procurement
- Install and support a wide spread EV charging infrastructure in the state, making sure that any State or local government stations are available to the public.
- Work with municipalities to support alternative fuel fleets
- Enhance support of municipal smart growth and transportation efforts
- Expand upon the I-93 task force. Work with regional transit agencies and private partners to coordinate schedules and services and make them available on the web
- Continue anti-idling efforts

Energy Siting


- SB 99 of 2013 required a review of NH's siting process
- Public input process identified potential changes
- Review of other states' approaches
 - Reports available at <http://www.nh.gov/oep/energy/programs/sb99.htm>
- New siting rules must be in effect by 7/1/15
 - Pre-rulemaking input available at <http://www.nh.gov/oep/energy/programs/sb99pre-rulemaking.htm>
- SB 245 of 2014 changed the siting process, including
 - Smaller SEC with 2 public members
 - Changes to SEC considerations in siting
 - Staffing and funding for the SEC

Next Steps

In June the SEAC travels outside of Concord to get additional public input.



July 25th is the deadline for all comments on the Draft Strategy.



On September 1st OEP will release the Final Strategy.



This Fall: Implementation work begins!

Comments Submission

- Due to OEP no later than July 25th; OEP welcomes (and encourages) comments sooner
- All strategy materials are at:
<http://www.nh.gov/oep/energy/programs/SB191.htm>
- Public comments thus far are at:
<http://www.nh.gov/oep/energy/programs/sb191-resources.htm>
- Please submit comments to:
brandy.chambers@nh.gov

Other Considerations for Energy Efficiency

- Advance PACE Financing
 - Coordinate with Green Bank efforts
 - Building Codes and Compliance
 - New Hampshire should strive to adopt the most recent code, and work with municipalities and the building industry to find creative ways to help them with the challenge of compliance
- Consider expanding NHTSaves model to create All Fuels Efficiency Program, with Thermal SBC
 - Engage additional private sector energy suppliers in the delivery of efficiency programs

Grid Modernization - Other Challenges

- **Micro-grids-** Long term strategy; technology is new, and it relies on the larger infrastructure investments first. NH should keep this in mind as regulatory frameworks and policies are developed in order to facilitate micro-grids in the longer term.
- **Expanded Demand Response/Real-Time Pricing Programs-** Another long-term strategy that requires the infrastructure investments (real time metering) first. This strategy could be accelerated to the medium term but would require significant investment of time and capital, but paybacks are significant.

Other Considerations for Renewable Energy

- Encourage Large Scale Solar
 - Low ACP prices need to be addressed
 - Distributed Generation Statute is underutilized
- Biomass for thermal/CHP uses
 - More efficient to use biomass for direct thermal loads/CHP than for electric generation.
- Terrestrial Wind
 - Additional development could focus on smaller community scale development.
- Offshore Wind
 - The high cost of offshore wind in combination with NH's limited coastline create an extremely limited market for this technology, but changes in technology this may prove fruitful in years beyond the horizon of this strategy.
- Small Scale Hydroelectric
 - Limited potential in remote locations not near load centers limits this technology as a major contributor to New Hampshire's electricity profile.

Other Considerations for Fuel Choice

- Alternative technologies for home heating and space conditioning are application specific. In recognition of this, programs must be flexible in the technologies they support focusing on relative improvements and leaving technical recommendations to energy auditors and decisions to consumers.
- Biomass for thermal energy presents a significant economic opportunity, but the role the state should play in facilitating the growth of this market is unclear.

Other Considerations for Transportation

- VMT pricing programs
 - Although pilot programs are in place across North America, NH would have to innovate and become one of the first states to implement this type of system.
- Increased fees for parking to reduce miles driven
 - NH generally doesn't have a parking problem.
 - Even with improved public transport, many will still need to drive.
- High occupancy vehicle lanes
 - Without congestion - HOV lanes do little to incent ridesharing
- Direct rebates or tax breaks for EV purchases
 - Minimal funds available and this approach "picks winners"
- Cash for clunkers program
 - Requires significant funding, and would be of debatable use.
- Increase registration fees for less fuel efficient vehicles
 - Significant fees would be politically divisive, and actually pale in comparison to fuel economy savings.